STATEMENT OF BASIS

Applicant:	City of Woonsocket
Permit Number:	SD0021792
Contact Person(s):	The Honorable John Ball, Mayor PO Box 456 Woonsocket, SD 57385 (605) 796-4112
Permit Type:	Minor Municipal Wastewater Treatment Facility – Renewal

DESCRIPTION

The city of Woonsocket owns and operates a wastewater treatment facility (WWTF) located about one half mile south of the city in the southeast ¼ of the southeast ¼ of Section 28, Township 107 North, Range 62 West, in Sanborn County, South Dakota (Latitude 44.043632º, Longitude -98.272869º – Navigational Quality GPS).

The WWTF consists of a gravity flow collection system to a three-cell stabilization pond system and is aided by three area lift stations. The secondary ponds (Ponds 2 and 3) are 6.0 and 7.0 acres, respectively and were constructed in 1964. The primary pond (Pond 1) was constructed later in 1987 and is 4.5 acres. See Attachment 1 for a flow diagram of the WWTF. The ponds are operated in series; however, the inlet pipe and transfer pipe between the ponds are in close proximity and cause short-circuiting. This results in operational problems suspected of decreasing the facility's treatment capacity, which may be the cause for some effluent violations. Therefore, to correct the problem, the city is proposing to expand Pond 1, with construction beginning in 2009, to correct the short-circuiting.

The discharge from Pond 3 is valve-controlled, and effluent flow rate is measured with a V-notch weir. The average design flow of the facility is 97,000 million gallons per day (MGD), with an average design organic treatment capacity of 130.8 lbs BOD_5/day (five-day biological oxygen demand). The WWTF serves a population of 720 (2000 census) and also receives domestic contributions from VanDyke's Taxidermy (a division of Cabelas, Inc.). No other known industries contribute to the WWTF.

RECEIVING WATERS

Discharges from this facility enter a county ditch and flow about 3 and 1/3 miles to Long Lake. The ditch is classified by the South Dakota Surface Water Quality Standards (SDSWQS), Administrative Rules of South Dakota (ARSD), Section 74:51:03:01 for the following beneficial uses:

(9) Fish and wildlife propagation, recreation and stock watering waters; and
(10) Irrigation waters.

Long Lake is currently classified by the SDSWQS, ARSD Sections 74:51:02:01, 74:51:02:02, and 74:51:02:58 for the following beneficial use:

(6) Warmwater marginal fish life propagation waters;
(7) Immersion recreation waters;
(8) Limited-contact recreation waters; and
(9) Fish and wildlife propagation, recreation and stock watering waters.

Every three years, the South Dakota Department of Environment and Natural Resources (SDDENR) conducts a review of South Dakota's surface water quality standards and waterbody beneficial uses as required by the Clean Water Act. In SDDENR's 1992 review, Long Lake was determined to be a meandered lake in Sanborn County and assigned the additional beneficial uses of (6), (7), and (8), as noted above. Based on these findings, the city of Woonsocket's current permit required the city to cease its discharge by December 31, 2008.

SDDENR reviewed Long Lake again in 2008 and found Long Lake has been highly impacted by drainage ditches and no longer supports the assigned beneficial uses on a regular basis. Long Lake now appears to be more of a functional wetland, with periods where Long Lake dries up completely. In addition, the South Dakota Department of Game, Fish & Parks manages Long Lake as a Game Production Area and does not believe that Long Lake can support a fishery.

Therefore, SDDENR is proposing the beneficial uses of warmwater marginal fish life propagation, immersion recreation, and limited-contact recreation be removed from Long Lake. SDDENR is proposing that Long Lake be reclassified in the SDSWQS, ARSD Sections 74:51:02:01 to include only the following beneficial use:

(9) Fish and wildlife propagation, recreation and stock watering waters.

A hearing before the Water Management Board is scheduled for March 11, 2009, regarding these proposed changes. SDDENR is proceeding with the issuance of this permit, basing the proposed effluent limits on the beneficial use classification of fish and wildlife propagation, recreation and stock watering waters for Long Lake. However, if the proposed classification change for Long Lake is not approved, this permit shall be reopened and modified to reflect those changes.

ANTIDEGRADATION

SDDENR has fulfilled the antidegradation review requirements for this permit. In accordance with South Dakota's Antidegradation Implementation Procedure and the SDSWQS, no further review is required. The results of SDDENR's review are included in Attachment 2.

MONITORING DATA

The city of Woonsocket has submitted Discharge Monitoring Reports (DMRs) as required under the current permit. The data in Attachment 3 shows that the facility has had two violations of BOD_5, and multiple violations of total suspended solids (TSS) and pH. However, if the city expands Pond 1 as is proposed, no future violations are expected.

INSPECTIONS

Personnel from the SDDENR conducted a *Operation and Maintenance Inspection* of the WWTF on June 28, 2005. The following requirements, recommendations and comments were included in the report:

Requirements

1. Mr. Richard Jensen keeps an inspection notebook, but has not included all the information that needs to be recorded in it. All pond site inspections conducted by city personnel must be documented in a notebook to be reviewed by SDDENR or EPA personnel when an inspection occurs. The inspection shall be conducted to determine if a discharge is occurring, has occurred since the previous inspection, and/or if a discharge is likely to occur before the next inspection. In addition, the inspection shall be performed to determine if proper operation and maintenance procedures are being undertaken at the wastewater treatment facility. At a minimum, the notebook should include the following:

    a. Date and time of inspection;
    b. Name of the inspectors;
    c. The facility's discharge status;
    d. The measured amount of pond freeboard at the outlet works;
    e. Identification of operational problems and/or maintenance problems;
    f. Recommendations, as appropriate, to remedy identified problems;
    g. A brief description of any actions taken with regard to problems identified; and
    h. Other information, as appropriate.

2. The compliance schedule in the city's permit states that the city shall submit a progress report on design of the treatment system and/or process modifications described in the engineering study or facility plan by **October 1, 2004**. The department never received this report. Please submit this report as soon as possible.

3. All sanitary sewer overflows (SSO) and other unauthorized releases need to be reported to the department within 24 hours of their occurrence. The sewer main break in December 2004 was not reported to the department within 24 hours.

4. Screenings removed from the lift station wet well baskets must be disposed of at a permitted landfill in order to eliminate the public health hazards associated with the debris. In some cases, on-site disposal of the screenings is allowed. Contact this department for further information about the disposal of screenings.

Recommendations and Comments

1. The city may not be collecting sufficient funds to cover the expenses for operating the wastewater facility. To effectively operate the facility, the annual revenues must meet or exceed the annual expenses. The city should consider raising its wastewater rates to accomplish this. Many communities are finding that an appropriate rate is about $17 per household per month. The city may want to consider annual increases to the sewer use rates over a period of several years to reach a more appropriate level. Financial and technical assistance to undertake a rate analysis may be available through the department or your local planning district. You may contact the Water Resources Assistance Program at 773-4216 or your local planning district for further information.

2. There are some weeds growing in the pond and on the pond dikes. These weeds should be eliminated to prevent damage to the dikes from the root systems of these plants. They also tend to inhibit the air action on the ponds which in turn inhibits the biological action necessary to treat the wastes and keep odors to a minimum. Once the weeds are eliminated, the pond site should be reseeded with an appropriate grass.

3. Some additional signs are required around the pond. The rule for warning signs is one sign every 500 feet around the pond, starting at the gate, with at least one sign on each side. The gate should be kept locked to prevent unauthorized entrance or injury at the pond site. A section of the fencing around the ponds has been cut and needs to be fixed.

4. We would like to encourage you to give Mr. Richard Jensen, or another representative of Woonsocket, the opportunity to attend some of the various wastewater training courses sponsored by the state to upgrade their skills and share knowledge concerning the operation and maintenance of municipal wastewater systems. For more information as to dates and locations of upcoming courses in your area, contact South Dakota Association of Rural Water Systems, under contract with SDDENR, at 5009 W 12th Street, Suite 5, Sioux Falls, SD 57106. Phone: (605) 336-7219. Internet website: www.sdarws.com

5. The city should consider developing an emergency response plan and/or a priority call list in the event of a sewer line break, severe storm, or natural disaster. An emergency response plan and a priority call list will aid the town in handling these events. For further information or assistance in preparing an emergency response plan, please contact the South Dakota Association of Rural Water Systems at (605) 336-7219, or visit their website, http://www.sdarws.com/.

6. We recommend that the city contact South Dakota Association of Rural Water Systems so that they can provide you with information and assist you with conducting a vulnerability assessment of your wastewater facility.

7. In order to monitor wastewater flow to the collection system, the pumping rates of the lift station should be determined. This pumping rate can be found by measuring the drop in water in the wet well over a one minute pumping period, then calculating the volume of water pumped to the ponds. The gallon per minute pumping rate combined with hour meter readings, will give the total volume of wastewater over a given period of time. By compiling records of weekly or monthly flows and comparing them to one another inflow/infiltration into the sewer system may be detected and the problem corrected before a major breakdown occurs. Also, by checking and rechecking the pumping rates three (3) or four (4) times per year, pump or motor problems may be detected before a complete failure occurs. See enclosed sheets with the pump calibration equations. Contact this office if the operator would like assistance with the calibration procedure.

8. Ponds were under surcharge conditions at the time of the inspection. Ponds should have at least 2-3 feet of freeboard.

EFFLUENT LIMITS

The permittee shall comply with the effluent limits specified below. These limits are based on the Secondary Treatment Standards (ARSD Section 74:52:06:03), the SDSWQS, and Best Professional Judgment (BPJ).

No discharge shall occur from this facility until permission is granted by SDDENR. This is based on past performance of the facility, and BPJ. The permittee shall comply with the effluent limits specified below.

Outfall 001 – Any discharge from the third cell of the wastewater treatment facility an unnamed tributary of Long Lake (Latitude 44.042362º, Longitude -98.272194º-Navigational Quality GPS).

1. The five-day Biochemical Oxygen Demand (BOD_5) concentration shall not exceed 30 mg/L (30-day average) or 45 mg/L (7-day average). These limits are based on the Secondary Treatment Standards.

2. The Total Suspended Solids (TSS) concentration shall not exceed 30 mg/L (30-day average) or 45 mg/L (7-day average). These limits are based on Secondary Treatment Standards.

   Once facility upgrades are complete and if analytical results for BOD_5 show compliance with the permit limits, the permittee may request the permit issuing

authority to change the TSS permit limits to 110 mg/L (30-day average) and 165 mg/L (7-day average). This change shall be based on ARSD Section 74:52:06:04 and SDDENR policy for discharges from stabilization ponds to waters classified for warmwater marginal fish life propagation. **The permit issuing authority may approve the change without additional public notice.**

3. The pH shall not be less than 6.0 standard units or greater than 9.0 standard units in any single analysis and/or measurement. These limits are based on Secondary Treatment Standards.

   Note: SDDENR specifies that pH analyses are to be conducted within 15 minutes of sample collection with a pH meter. Therefore, the permittee must have the ability to conduct onsite pH analyses. The pH meter used must be capable of simultaneous calibration to two points on the pH scale that bracket the expected pH and are approximately three standard units apart. The pH meter must read to 0.01 standard units and be equipped with temperature compensation adjustment.

4. No chemicals, such as chlorine, shall be used without prior written permission. This limit is based on BPJ.

Effluent water temperature (°C), flow rate in million gallons per day (MGD), total flow in million gallons (MG), and duration of discharge (days) shall be monitored, but will not have a limit.

SELF MONITORING REQUIREMENTS

Prior to requesting permission to discharge, the permittee shall collect a grab sample from each lagoon cell from which it is desired to discharge from and have the sample analyzed for BOD_5, TSS, pH, temperature, fecal coliform, ammonia-nitrogen, and total residual chlorine (if chlorinating). The results of the analyses, along with a request to discharge, shall be submitted to SDDENR. The request to discharge shall explain why a discharge is needed, when the discharge would start, the expected duration of the discharge, and the approximate volume of water to be discharged. The estimated flow condition of the receiving water shall also be reported (i.e. dry, low, normal, high). **No discharge shall occur until permission has been granted by SDDENR.**

A minimum of three samples shall be taken during any discharge. A sample shall be taken at the beginning, middle, and end of the discharge if the discharge is less than one week in duration. If a single, continuous discharge is greater than one week in duration, three samples shall be taken the first week and one each following week. All of the samples collected during the 7-day or 30-day period are to be used in determining the averages. The permittee always has the option of collecting additional samples if appropriate.

Effluent monitoring results shall be summarized for each month and recorded on separate DMRs to be submitted to SDDENR on a **quarterly** basis. If no discharge occurs during a month, it shall be stated as such on the DMR.

Monitoring shall consist of **monthly** inspections of the facility and the outfall to verify that proper operation and maintenance procedures are being practiced and whether or not there is a discharge occurring from this facility. **Daily** inspections are required during a discharge. **Weekly** inspections of lift stations are required, but **daily** inspections are recommended. Documentation of each of these visits shall be kept in a notebook to be reviewed by SDDENR or EPA personnel when an inspection occurs.

SLUDGE

Based on the city of Woonsocket's permit application, SDDENR does not anticipate sludge will be removed or disposed of during the life of the permit. Therefore, the proposed Surface Water Discharge permit shall not contain sludge disposal requirements. However, if sludge disposal is necessary, the city of Woonsocket is required to submit to SDDENR a sludge disposal plan for review and approval **prior** to the removal and disposal of sludge.

DRAINAGE ISSUES

Sanborn County has the authority to regulate drainage. The city of Woonsocket is responsible for getting any necessary drainage permits from the county **prior** to discharging.

ENDANGERED SPECIES

This is a renewal of an existing permit. No listed endangered species are expected to be impacted by activities related to this permit. However, the table below shows the species that may be present in the city of Woonsocket's geographic area as of September 9, 2008.

COUNTY	GROUP	SPECIES	CERTAINTY OF OCCURRENCE	STATUS
SANBORN	BIRD	CRANE, WHOOPING	POSSIBLE	ENDANGERED
	FISH	SHINER, TOPEKA	KNOWN	ENDANGERED

This information was accessible at the following US Fish and Wildlife Service website as of February 5, 2009: http://www.fws.gov/southdakotafieldoffice/endsppbycounty.htm

PERMIT EXPIRATION

A five-year permit is recommended.

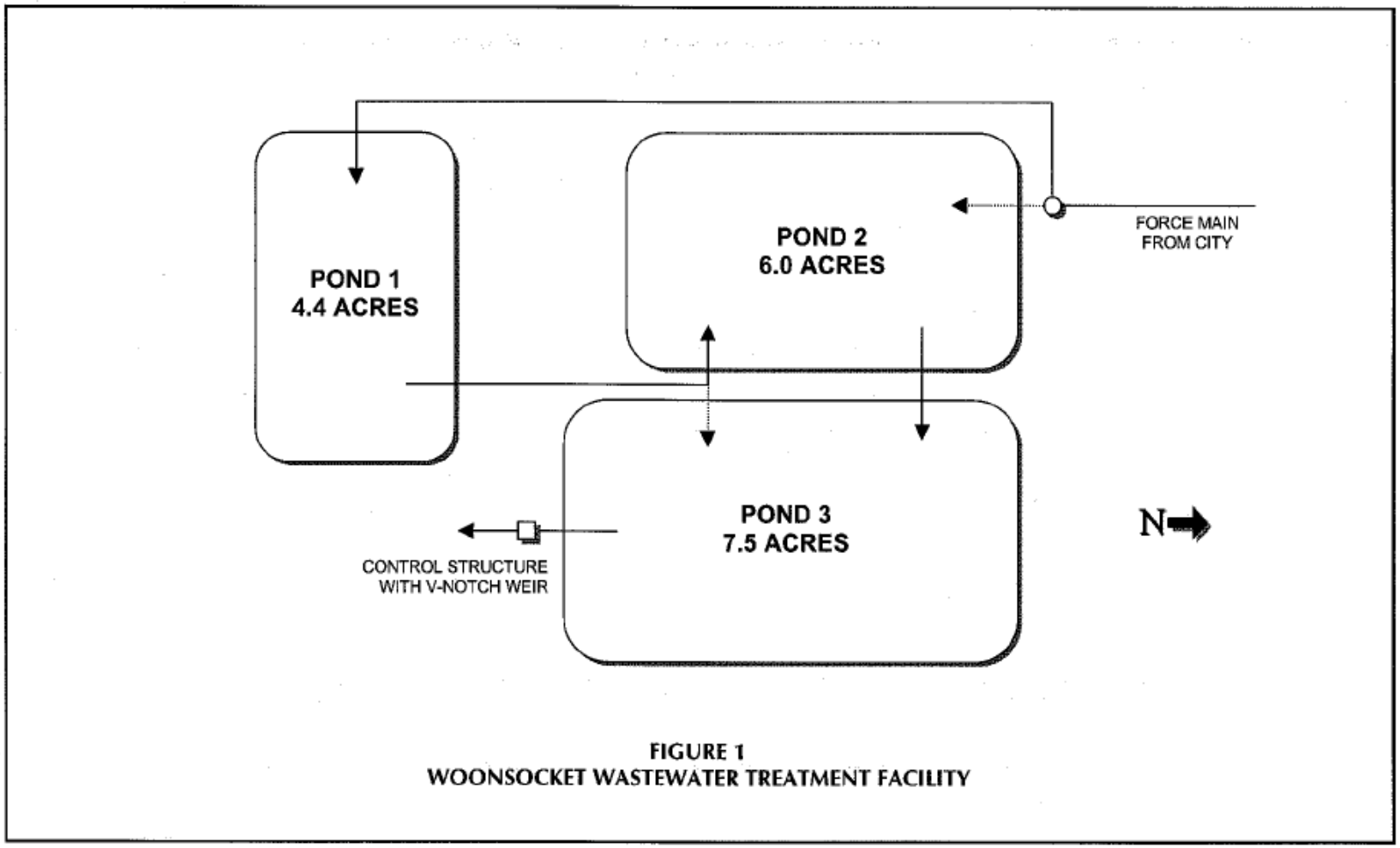
PERMIT CONTACT

Any questions pertaining to this statement of basis can be directed to Jill Riedel, Natural Resources Engineer for the Surface Water Quality Program, at (605) 362-3543.

February 5, 2009

ATTACHMENT 1
Facility Flow Diagram

Flow Diagram of the Woonsocket WWTF[1]



[1]**Diagram taken from the 2002 Composite Correction Program Results for the City of Woonsocket**

ATTACHMENT 2
Antidegradation Review

Permit Type: **Minor Municipal Renewal** Applicant: **City of Woonsocket**
Date Received: **June 25, 2008** Permit #: **SD0021792**
County: **Sanborn** Legal Description: **SE¼ OF SE¼ SEC 28, T107N, R62W**
Receiving Stream: **A county ditch (unnamed tributary)** Classification: **9, 10**
If the discharge affects a downstream waterbody with a higher use classification, list its name and uses: **Long Lake: 9**

APPLICABILITY

1. Is the permit or the stream segment exempt from the antidegradation review process under ARSD 74:51:01? Yes ☒ No ☐ If no, go to question #2. If yes, check those reasons why the review is not required:

- ☐ Existing facility covered under a surface water discharge permit is operating at or below design flows and pollutant loadings;
- ☐ *Existing effluent quality from a surface water discharge permitted facility is in compliance with all discharge permit limits;
- ☐ *Existing surface water discharge permittee was discharging to the current stream segment prior to March 27, 1973, and the quality and quantity of the discharge has not degraded the water quality of that segment as it existed on March 27, 1973;
- ☐ *The existing surface water discharge permittee, with DENR approval, has upgraded or built new wastewater treatment facilities between March 27, 1973, and July 1, 1988;
- ☒ The existing surface water discharge permittee discharges to a receiving water assigned only the beneficial uses of (9) and (10); the discharge is not expected to contain toxic pollutants in concentrations that may cause an impact to the receiving stream; and DENR has documented that the stream cannot attain a higher use classification. This exemption does not apply to discharges that may cause impacts to downstream segments that are of higher quality;
- ☐ Receiving water meets Tier 1 waters criteria. Any permitted discharge must meet water quality standards;
- ☐ The permitted discharge will be authorized by a Section 404 Corps of Engineers Permit, will undergo a similar review process in the issuance of that permit, and will be issued a 401 certification by the department, indicating compliance with the state's antidegradation provisions; or
- ☐ Other:

*An antidegradation review is not required where the proposal is to maintain or improve the existing effluent levels and conditions. Proposals for increased effluent levels, in these categories of activities are subject to review.

No further review required.

ANTIDEGRADATION REVIEW SUMMARY

11. The outcome of the review is:

- ☒ A formal antidegradation review was not required for reasons stated in this worksheet. Any permitted discharge must ensure water quality standards will not be violated.
- ☐ The review has determined that degradation of water quality should not be allowed. Any permitted discharge would have to meet effluent limits or conditions that would not result in any degradation estimated through appropriate modeling techniques based on ambient water quality in the receiving stream, or pursue an alternative to discharging to the waterbody.
- ☐ The review has determined that the discharge will cause an insignificant change in water quality in the receiving stream. The appropriate agency may proceed with permit issuance with the appropriate conditions to ensure water quality standards are met.
- ☐ The review has determined, with public input, that the permitted discharge is allowed to discharge effluent at concentrations determined through a total maximum daily load (TMDL). The TMDL will determine the appropriate effluent limits based on the upstream ambient water quality and the water quality standard(s) of the receiving stream.
- ☐ The review has determined that the discharge is allowed. However, the full assimilative capacity of the receiving stream cannot be used in developing the permit effluent limits or conditions. In this case, a TMDL must be completed based on the upstream ambient water quality and the assimilative capacity allowed by the antidegradation review.
- ☐ Other: _____

Jill M. Riedel, E.I.T.	February 5, 2009
Reviewer	Date
Kelli D. Buscher, P.E.	February 5, 2009
Team Leader	Date

ATTACHMENT 3
Monitoring Data

City of Woonsocket DMR Data

	BOD_5		Fecal Coliform		Ammonia		pH		TSS		Water Temp	
DMR Date	**30D Avg**	**7D Avg**	**30D Geo**	**Dly Max**	**30D Avg**	**Dly Max**	**Dly Min**	**Dly Max**	**30D Avg**	**7D Avg**	**30D Avg**	**Dly Max**
Limits	30 mg/L	45 mg/L	#/100mL	#/100mL	mg/L	mg/L	6.0 s.u.	9.0 s.u.	30 mg/L	45 mg/L	°C	°C
May-04	**35.3**	35.3	0	310	0.14	0.14	**9.47**	**9.43**	**134.6**	**134.6**	NA	NA
Mar-06	23.8	21.0	9	370	7.84	8.35	**9.30**	**9.6**	**47.0**	35.0	5.5	6.5
Apr-06	NA	41.0	NA	NA	NA	NA	NA	NA	NA	**100.0**	NA	NA
May-07	20.0	29.0	NA	NA	0.71	0.88	EF	EF	**113**	**168.0**	EF	EF
Jun-08	**35.7**	35.7	NA	NA	0.1	0.16	**9.2**	**9.3**	**85.33**	**85.33**	23.4	23.5

	Duration of Discharge	Flow Rate		
DMR Date		**Monthly Total**	**30D Avg**	**Dly Max**
Limits	Days/Mo	MG/mo	MGD	MGD
May-04	NA	NA	NA	NA
Mar-06	NA	NA	0.41	0.41
Apr-06	NA	NA	NA	NA
May-07	14	12.23	0.87	0.87
Jun-08	12	NA	NA	NA

NA – Sample analysis not conducted
EF – Sampling equipment failure

Bolded, shaded text indicates a permit violation
No discharge was reported for the months not included in the table